Taxonomic study of the *histrio* group with a new species of *Macrophya* Dahlbom (Hymenoptera: Tenthredinidae) from China

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Abstract: In this paper, the relationships and characteristics of the *M. histrio* group, which now includes eight known species worldwide, are briefly discussed. A key to the five known species of the *M. histrio* group known from China is provided. *Macrophya latidentata* Li, Liu *&* Wei sp. nov. of the *M. histrio* group from Guangdong in China is described. It is similar to *M. histrioides* Wei, 1998.

Key words: Symphyta; Tenthredinoidea; Tenthredininae; taxonomy; sawflies; *Macrophya latidentata*

中国钩瓣叶蜂属密纹钩瓣叶蜂种团分类并记一新种（膜翅目：叶蜂科）

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摘要：简要讨论了中国广东省钩瓣叶蜂属 *Macrophya* Dahlbom 密纹钩瓣叶蜂种团 *M. histrio* group 的主要鉴别特征和种类分布概况，编制了 *M. histrio* group 中国已知种类检索表，并记述 1 新种：宽齿钩瓣叶蜂 *Macrophya latidentata* Li, Liu & Wei sp. nov.。

关键词：广腰亚目；叶蜂总科；叶蜂亚科；分类；叶蜂；宽齿钩瓣叶蜂

Introduction

Macrophya Dahlbom, 1835 is the third largest genus in the Tenthredininae and the fourth largest of the Tenthredinidae. At present, 27 species groups are provisionally recognized in this genus and 274 species had been described to the end of 2016 (Li & Wei 2013; Li *et al*. 2013a, b, c, 2014a, b, 2016; Liu *et al*. 2015a, b, 2016; Shinohara & Li 2015; Shinohara & Yoshida 2015). In China, 135 species have been recorded (Wei *et al*. 2006, 2013; Taeger *et al*. 2010; Zhao *et al.* 2010a, b; Zhao & Wei 2011; Zhu *et al*. 2012; Li *et al*. 2012, 2013a, b, c, 2014a, b, 2016; Li & Wei 2012, 2013; Wu *et al*. 2012; Liu *et al*. 2015a, b, 2016).

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The *Macrophya histrio* group is a medium-sized group with 7 previously known world species. It includes the following: from North Burma (*M. histrio* Malaise, 1945 in Malaise 1945), Japan (*M. kisuji* Togashi, 1974 in Togashi 1974), Nepal, (*M. kathmanduensis* Haris, 2000 in Haris 2000), Laos, (*M. hergovitsi* Haris & Roller, 2007 in Haris & Roller 2007), 4 species from China (*M. histrio*, *M. histrioides* Wei, 1998; in Wei & Nie 1998), *M. xanthosoma* Wei, 2005 in Wei & Xiao 2005) and *M. wui* Wei *&* Zhao, 2010 in Zhao *et al*. 2010a). They are similar in general morphology and form a distinct species group. Here, another new species of this *histrio* group from Guangdong, China, is described, and a key to the 5 species known from China is provided.

Material and methods

Specimens were examined with a Motic-SMZ-168 dissection microscope. Adult images were taken with a Nikon D700 digital camera and this series of images were montaged using Helicon Focus (©HeliconSoft). All images were further processed with Adobe Photoshop CS 11.0.

Morphological descriptions of new species are based on the holotype. The terminology of genitalia follows Ross (1945) and that of general morphology follows Viitasaari (2002). For a few terms (e.g. middle fovea and lateral fovea), we follow Takeuchi (1952).

Specimens examined during this study are deposited in the Insect Collection of Central South University of Forestry and Technology, Changsha, China including the holotype of the new species.

Taxonomy

Macrophya histrio species group

Diagnosis. Body mainly black, without metallic tinge or red macula, following parts always yellowish-white: labrum, posterior margin of pronotum, lateral sides of abdominal tergum 7 with broad and long maculae, abdominal tergum 10, and trochanters. Dorsum of head less shiny, frons with dense punctures; anterior margin of clypeus deeply arcuate, incised to about 1/3–1/2 length of clypeus; malar space narrower than 0.5 times diameter of middle ocellus; frons not depressed, as high as top of eyes in lateral view; occipital carina complete; antenna moderately slender, slightly dilated near middle; antennomere 3 much longer than antennomere 4. Mesoscutellum elevated and roundish; mesopleuron usually with distinct yellowish-white maculae; metepimeral appendage distinct; dorsum of all abdominal terga with distinct and dense microsculpture; claw with inner tooth broader and longer than outer tooth. Lancet slightly broad and long, serrulae subtriangular, distinctly protruding, middle serrulae each with 1 proximal and 5–8 distal subbasal teeth, subbasal teeth distinct, annular spine bands narrow, hairs on annuli dense.

Diagnostic characters of the *histrio* group are: dorsum of all abdominal terga with distinct and dense microsculpture; lateral sides of abdominal tergum 7 with broad and long maculae; claw with inner tooth broader and longer than outer tooth; serrulae subtriangular, and distinctly protruding, hairs on annuli dense.

In China, the *histrio* group includes 4 previously known species and 1 new species described here. They can be separated using the following key.

Key to the species of the *Macrophya histrio* group from China

1. Abdominal terga 2–6 entirely black, laterally without row of white macula ····2
-. Dorsum of abdominal terga 2–6 black, laterally with distinct row of white maculae ····3
2. Pronotum, mesoscutellum and posttergite entirely black (Fig. 1); mesopleuron and metapleuron entirely black, without white maculae (Fig. 5); lateral sides of abdominal terga 2–3 with small white maculae; most of all coxae yellowish-white, base of hind coxa on outer side with long and yellowish-white maculae; postocellar area 1.6 times broader than long (Fig. 2); metepimeral appendage slightly narrower than a cenchrus; apical 2/3 of fore wing with pale smoky macula, basal 1/3 hyaline (Fig. 1). China (Guangdong) ···· ····· *M. latidentata* Li, Liu & Wei **sp. nov.**
-. Narrow posterior margin of pronotum, mesoscutellum and posttergite entirely yellowish-white; mesopleuron and metapleuron black with center of mesepisternum and posterior corner of metepisternum yellowish-white; abdominal terga 2–3 entirely black; most of all coxae black, base of hind coxa on outer side with small yellowish-white macula; postocellar area 2.2 times broader than long; metepimeral appendage distinctly larger than a cenchri; fore wing without smoky macula and hyaline. China (Shaanxi, Shanxi, Henan, Hubei) ····· *M. histrioides* Wei
3. Upper temple with yellowish-white maculae on posterior margin; basal 3/4 of hind femur yellowish-white, apical 1/4 black; middle 3/5 of hind tibia with yellowish-white, broad ring; metepimeral appendage entirely yellowish-white. China (Hunan, Jiangxi, Guizhou, Fujian, Guangxi)····· *M. xanthosoma* Wei
-. Upper temple entirely black; base of hind femur with yellowish-white maculae not longer than 1/2 times length of hind femur; middle of hind tibia with yellowish-white maculae shorter than 1/2 length of hind tibia; metepimeral appendage entirely black ····4
4. Postocellar area with "ш"-like yellowish-white maculae, 2.3 times broader than long; metepimeral appendage distinctly larger than diameter of a cenchrus; scape largely black; abdominal tergum 9 entirely black, laterally without yellowish-white macula. China (Gansu, Shaanxi, Hubei) ····· *M. wui* Wei & Zhao
-. Postocellar area entirely yellowish-white, 1.8 times broader than long; metepimeral appendage smaller than diameter of a cenchrus; scape largely yellowish-white; abdominal tergum 9 not entirely black, laterally with distinct yellowish-white macula. Myanmar (North part); China (Yunnan) ····· *M. histrio* Malaise

***Macrophya latidentata* Li, Liu & Wei sp. nov.** (Figs. 1–8)

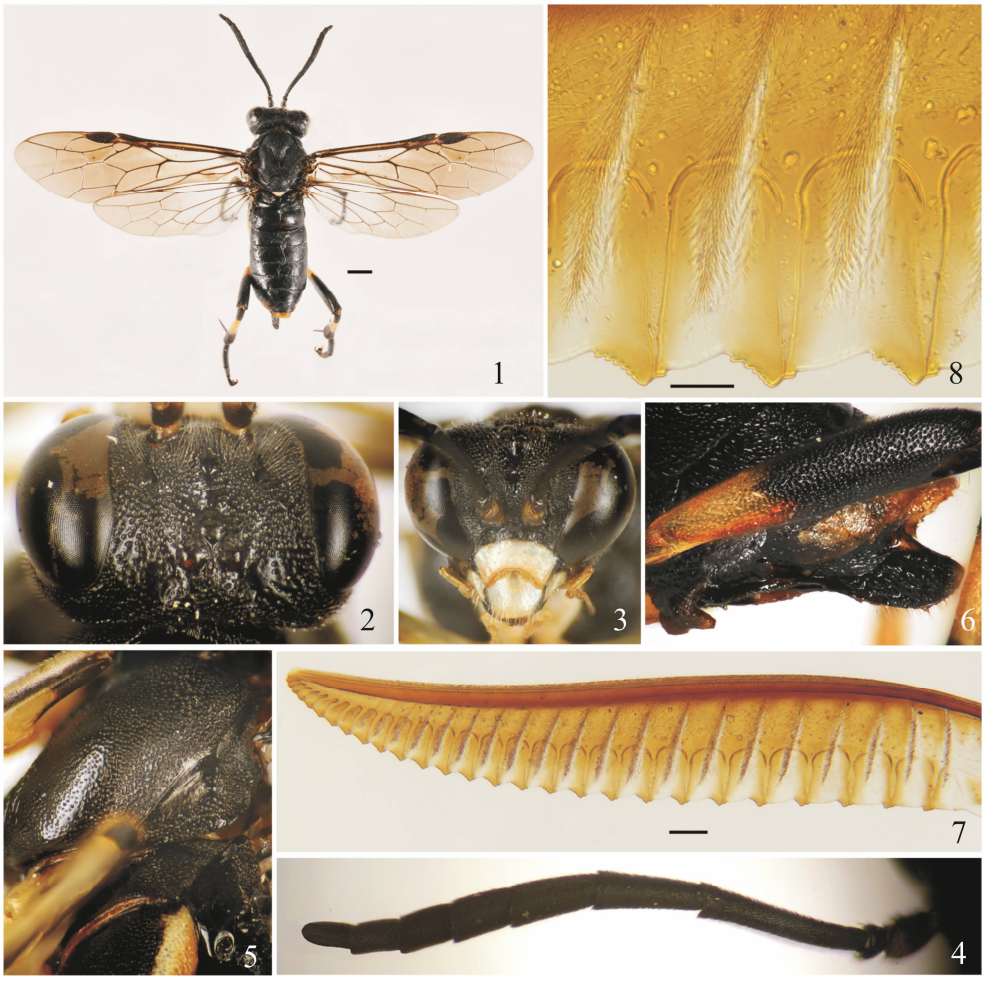
Female. Body length 11 mm. Body and legs largely black, following parts yellowish-white: palp, most of mandibles, labrum, clypeus, apical spot on inner side of scape, posterior corner of pronotum, anterior margin of tegula, most of mesoscutellar appendage, small maculae on lateral sides of abdominal terga 2–3, broad and long maculae on lateral sides of abdominal tergum 7, large macula on lateral sides of abdominal tergum 8, abdominal tergum 10, fore and middle coxae except basal margins with black macula, most of ventral side of hind coxa and stripe on outer side, all trochanters, anterior sides of fore and middle femora and basal part on outer side, basal 1/3 of hind femur, anterior sides of fore and middle tibiae, broad ring on middle 2/5 of hind tibia, fore and middle tibial spurs and most of ventral side of fore and middle tarsi. Body hairs short and dense, silver; setae on sheath pale black brown. Basal 1/3 of fore wing hyaline, apical 2/3 pale smoky, stigma and veins black; basal 1/2 of hind wing hyaline, apical 1/2 with much pale smoky macula (Fig. 1).

Dorsum of head less shiny; frons densely punctate, interspaces between punctures very narrow, without microsculpture (Fig. 2); labrum and clypeus shiny, labrum with shallow

punctures, clypeus with some large and sparse punctures, surface of clypeus with fine microsculpture; inner side of upper temple with small polished area and some punctures and fine microsculpture. Pronotum and mesonotum less shiny, punctures on mesonotum as small as punctures on head, without polished interspaces between punctures, but with fine microsculpture; mesoscutellum less shiny, center of mesoscutellum with some large punctures and fine microsculpture, all around with slightly dense punctures; mesoscutellar appendage shiny, with some shallow punctures and fine microsculpture; posttergites without punctures, and with fine, distinct microsculpture; mesepisternum shiny, with dense and rugose punctures, interspaces between punctures narrow, upper 1/3 with large punctures, lower 2/3 with small punctures; anepimeron dull, roughly and densely wrinkled; anterior 1/5 of katepimeron smooth and shiny, without punctures and microsculpture; middle 1/5 of katepimeron with some punctures and distinct microsculpture; posterior 3/5 of katepimeron with rugose punctures and distinct microsculpture; lateral side of metepisternum dull, minutely and densely punctate, ventral side sparsely punctate, interspaces between punctures with fine microsculpture; metepimeron shiny, area largely with some shallow punctures, microsculpture fine but distinct, upper region slightly rugose; posterior corner of metepimeron mostly polished, with a distinct basin, and some fine punctures in basin (Fig. 5). Lateral sides of abdominal tergum 1 coarsely punctate, center with fine and dense microsculpture; other abdominal terga with fine but distinct microsculpture but distinct, and dorsal sides with sparse and minute punctures. Hind coxa and outer surface of hind femur densely punctate, interspace shiny and broader than diameter of punctures. Surface of sheath coriaceous.

Anterior margin of labrum truncate; clypeus slightly flat, distinctly broader than distance between lower corner of eyes, lateral sides convergent forwards; anterior margin deeply arcuate and incised to 2/5 length of clypeus, lateral corners short and obtuse, subtriangular (Fig. 3); malar space 0.3 times diameter of middle ocellus; frons elevated, middle area slightly depressed, as high as top of eyes in lateral view; middle fovea shallow, roundish; lateral foveae deep, furrow-like; interocellar furrow distinct, postocellar furrow indistinct; POL : OOL : OCL = 4 : 14 : 10; postocellar area elevated, 1.6 times broader than long, anterior 2/3 of lateral furrow deep and posterior 1/3 shallow, clearly divergent backwards; head narrowed behind eyes in dorsal view, occipital carina complete. Antenna slender, 1.1 times longer than head and thorax together, as long as abdomen; antennomere 2, 1.2 times as long as broad; antennomere 3, 1.8 times longer than antennomere 4 (7 : 4), and 0.9 times longer than antennomeres 4 and 5 together (14 : 15), antennomeres 4–8 compressed and dilated, antennomeres 6–9 reduced (Fig. 4). Mesoscutellum distinctly elevated, top roundish, without carinae and not protruding, as high as top of mesonotum; mesoscutellar appendage with acute middle carina; posttergite with short and low middle carina; dorsal-posterior platform of mesepimeron equal to diameter of lateral ocellus; metepimeral appendage with a distinct basin, smaller than a cenchrus and about 1.3 times as broad as diameter of middle ocellus; mesopleuron and metapleuron as Fig. 5; distance between cenchri 3 times width of a cenchrus. Inner tibial spur of hind leg 0.6 times length of hind tarsomere 1; hind tarsomere 1 slender, about 1.2 times longer than following 4 tarsomeres together (25: 21); claw with inner tooth distinctly broader and longer than outer tooth. Ovipositor sheath distinctly longer than metabasitarsus (57: 50), apical sheath 1.1 times as long as basal sheath, apical margin roundish in lateral view (Fig. 6). Fore wing with vein cu-a joining cell 1M at basal 1/5, vein 2r joining cell 2Rs at apical 1/4, cell 2Rs slightly longer

than cell 1Rs, anal cell with a middle petiole 1.5 times longer than vein 1r-m, about 0.9 times longer than vein cu-a; petiole of anal cell in hind wing about 1/2 length of vein cu-a. Lancet of female with 27 serrulae (Fig. 7), serrulae subtriangularly protruding, middle serrulae each with 1 proximal and 4–6 distal subbasal teeth, distance between serrulae as long as a serrula, annular spine bands narrow, hairs on annuli dense, 8th–10th serrulae as Fig. 8.



Figures 1–8. *Macrophya latidentata* Li, Liu & Wei sp. nov., ♀, holotype. 1. Female adult, dorsal view; 2. Head, dorsal view; 3. Head, frontal view; 4. Antenna; 5. Mesopleuron and metapleuron; 6. Ovipositor sheath, lateral view; 7. Lancet; 8. The 8th–10th serrulae of lancet. Scale bars = 1 mm (1); 50 um (8); 100 um (7).

Holotype. ♀, **China**, Guangdong, Shixing County, Mt. Chebaling, 24°40′ N, 114°09′ E; alt. 400 m, 13-IV-2007, Xiaoni ZHU leg.

Etymology. This new specific epithet "*latidentata*" is derived from two Latin words, the "*latitudo*" (broad) and "*dentis*" (tooth), with reference to the broad inner tooth of the hind claw.

Remarks. This new species is similar to *M. histrioides* Wei, 1998. See the preceding key to species for separation of *M. histrioides* from other species of the *M. histrio* group.

Distribution. China (Guangdong).

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